

Novel Approaches to Obesity Prevention: Effects of Game Enjoyment and Game Type on Energy Expenditure in Active Video Games

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Abstract

Background:

Some active video games have been found to promote physical activity adherence because of enjoyment. However, many active games are exercise themed, which may interfere with the distracting properties that make game-based exercise more enjoyable than traditional exercise. This study compared exercise-themed and game-themed active games to investigate differences in energy expenditure and enjoyment.

Method:

Young adults ($N = 100$, 50 female, 55 overweight, aged 18–35 years) played two of four Wii Fit games (one aerobic game and one balance game per person) for 10 min each. Of the two aerobic games, one was exercise themed (jogging) and the other was game themed (hula hooping). Both balance games were game themed. Energy expenditure and enjoyment were measured.

Results:

After adjustment for gender and weight, aerobic games produced $2.70 \text{ kcal/kg}^{-1}/\text{h}^{-1}$ (95% confidence interval 2.41, 3.00) greater energy expenditure than balance games ($p < .001$), but balance games were more enjoyable ($p < .001$). In aerobic games, jogging produced greater energy expenditure than hula hooping in normal-weight and male participants ($p < .001$); in overweight and female participants, no differences were found ($p > .17$). Hula hooping was enjoyed more than jogging ($p = .008$). Enjoyment predicted energy expenditure in aerobic games ($B = 0.767$, $p = .010$).

Conclusions:

Aerobic games produced greater energy expenditure but lower enjoyment than balance games, and a game-themed aerobic game was found more enjoyable than an exercise-themed aerobic game. Integrating more strenuous activity into entertaining games instead of games that simply simulate exercise may be a fruitful avenue for active game development.

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Abbreviations: (BMI) body mass index, (CI) confidence interval, (M) mean, (MET) metabolic equivalent, (SD) standard deviation

Keywords: energy expenditure, gender, obesity, video game

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